

# Ekahau T301W

Wi-Fi Location Tag



## User Guide

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Ekahau tags must always be used in compliance with the user environment and instructions contained in the User Manual for the tags.

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# Table of Contents

<b>1 Introduction</b> .....	<b>1</b>
1.1 Software Release Level .....	1
1.2 Features of T301W .....	1
1.3 User Interface .....	2
1.4 Status Indication LEDs .....	2
<b>2 Initial Activation of the Tag</b> .....	<b>3</b>
2.1 Installing Ekahau Activator T301 .....	3
2.2 Supported Wi-Fi Adapters .....	3
2.3 Activation Procedure .....	3
2.3.1 Configuring Ekahau RTLS Controller Settings .....	3
2.3.2 Configuring Scan Settings .....	5
2.3.3 Configuring WLAN Settings .....	6
2.3.4 Configuring IP Settings .....	6
2.3.5 Activation .....	7
2.3.6 List of Available Settings in the Activator .....	11
<b>3 Configuration After Initial Activation</b> .....	<b>15</b>
3.1 Tag Configuration Settings in ERC Configs Page .....	15
3.2 Tag Actions Available in ERC Tags Properties Page .....	17
<b>4 Tag Operation</b> .....	<b>19</b>
4.1 Button Activated Location Update .....	19
4.2 Maintenance Call .....	19
4.3 De-activation / Resetting to Factory Settings .....	19
4.4 Firmware Update .....	19
4.5 Optimizing Battery Life .....	20
4.6 Turning off the T301W Tag .....	20
4.7 Charging the T301W tag .....	20
<b>5 Technical specifications</b> .....	<b>23</b>
5.1 General .....	23
5.2 Wi-Fi .....	23
5.3 Operating Ranges from an Access Point .....	23
5.4 Care and Maintenance .....	23
<b>6 Certifications</b> .....	<b>25</b>
<b>7 Limited Warranty</b> .....	<b>27</b>
<b>8 Disposing</b> .....	<b>29</b>



# 1 Introduction

The Ekahau T301W Wi-Fi tag is part of Ekahau RTLS (Ekahau Real-Time Location System) that consists of Ekahau T301 family tags, Ekahau RTLS Controller (ERC) software platform and Ekahau Vision end-user application. It is designed to be worn by patients, employees, children and other individuals, and it enables real-time visibility into a person's exact location – enterprise-wide, with reliable room- and sub-room level accuracy.

## 1.1 Software Release Level

This User Guide documents the functionality available with software release level, 0.4.5.

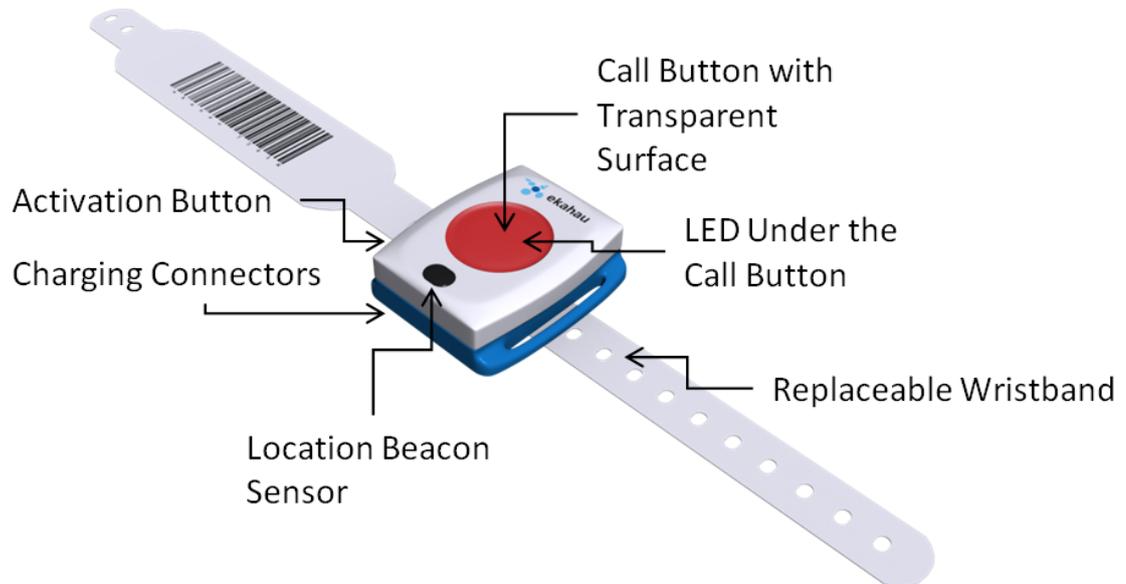
## 1.2 Features of T301W

The following features are included with this software release:

- Works with standard 802.11b/g/n Wi-Fi networks
  - \* 802.11b needs to be enabled in the Wi-Fi network if associated communication mode is used such as for maintenance
- Support for 64/128-bit WEP key, WPA, and WPA2-PSK authentication
- Static and dynamic IP addressing
- Configurable button for sending and acknowledging emergency or status messages
- Location reporting triggered by button, periodic timer, motion, and by Ekahau Location Beacons
- Support for associated and beaconing modes such as Cisco CCX, Aruba, Meru, Aerohive, and Motorola beaconing modes
- Two-color status indication LED
- Vibration alarm for alerting the person wearing it
- Battery monitoring and reporting
- IR Location Beacon sensor for room, sub-room, and bay level accuracy
- Waterproof enclosure allowing it to be thoroughly sanitized after use
- Activation using Ekahau Activator, standalone tag configuration software.
- Configuration using Ekahau RTLS Controller.

## 1.3 User Interface

Figure 1.1. T301W user interface



## 1.4 Status Indication LEDs

The tag is equipped with two multi-color LEDs that provide status indication. The table below lists the different modes of the tag LEDs:

Action	LED	Status
Activation	3 x Green	Activation successful
	3 x Red	Activation failed
De-activation (Reset)	3 x Green and Red	Reset successful
Charging	Orange	Charging
	Green	Battery full
Button press	1 x Orange	Button press recognized
ELP / EMP packet success	-	Success of the ELP / EMP packet is no longer indicated with the LED
Alarm	Configurable	Can be configured to use any pattern over EMP command

## 2 Initial Activation of the Tag

When the tag is delivered it does not have any of the necessary configuration settings. These environment specific settings need to be applied before the tag can connect to the network and the ERC. The T301W tags are delivered with the battery charged to a storage charge.

Tag activation is done using Ekahau Activator software that configures Ekahau T301 family tags wirelessly. The activation of the tags is explained in more details in chapter *Installing Ekahau Activator T301* on page 3.

After successful Activation you will see the MAC address of the tag appears on the ERC list of tags. After successful connection with ERC the configurations can be managed directly from ERC using **Tag Configurations** page.

### 2.1 Installing Ekahau Activator T301

The Ekahau Activator T301 can only be installed using the Ekahau RTLS installer. When you install the Ekahau RTLS, you do not necessarily need to install the Ekahau Activator if the target computer cannot be used to activate tags with a supported Wi-Fi adapter. If you want to install the Ekahau Activator later on another computer, simply run the RTLS setup file on the target computer and choose to install only the Ekahau Activator.

To install Ekahau Activator as a stand alone:

1. Choose a laptop (or a desktop with a supported Wi-Fi adapter) computer with Windows XP or 2000, at least 256 MB of memory, PC card slot, and 100 MB of free hard disk space
2. Install a supported **Wi-Fi adapter** using the driver provided by Ekahau. For list of supported adapters, please visit <http://www.ekahau.com/devices>
3. Run the RTLS setup file from it's location, and follow the on-screen instructions

### 2.2 Supported Wi-Fi Adapters.

You can find the latest supported Wi-Fi adapters from our website:

<http://www.ekahau.com/devices>

### 2.3 Activation Procedure

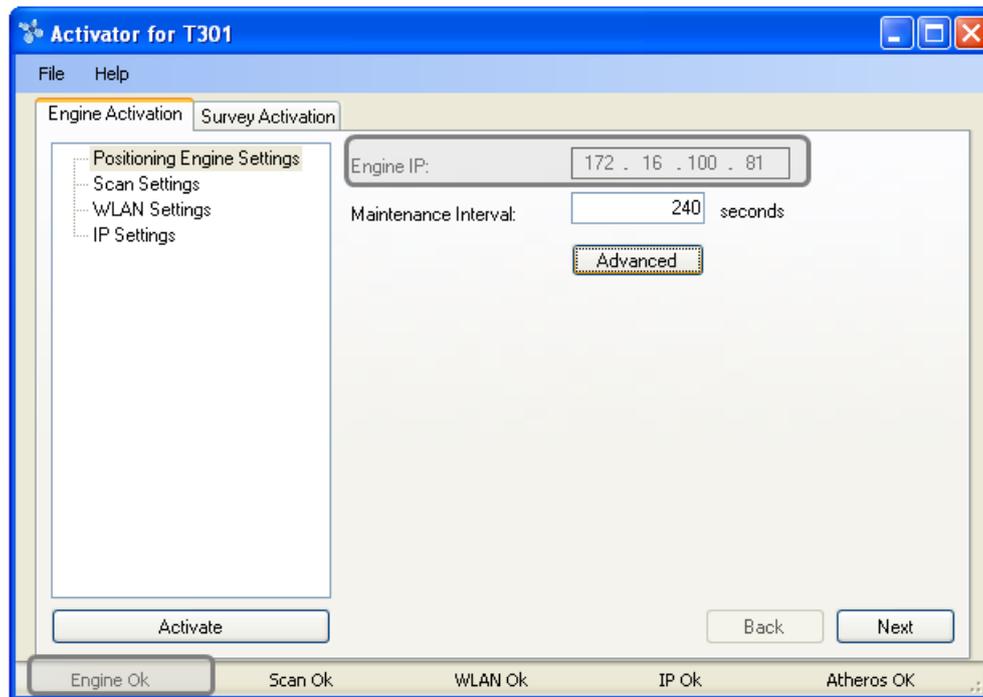
For the tags to be able to communicate with the Ekahau RTLS Controller, the tag needs to be activated e.g. the tag needs to be given the necessary parameter to associate with the network. At least the IP address of the Ekahau RTLS Controller, SSID of the network used and the IP configuration method are required. To activate T301W tags, you need to use the Ekahau Activator T301 which you can run from Ekahau Programs menu. After that, follow the following Activator configuration procedure:

#### 2.3.1 Configuring Ekahau RTLS Controller Settings

Input the IP address of the Ekahau RTLS Controller. The Maintenance Interval is by default 240 seconds, but shorter interval can be used if LED and Vibration alerts are sent frequently to the

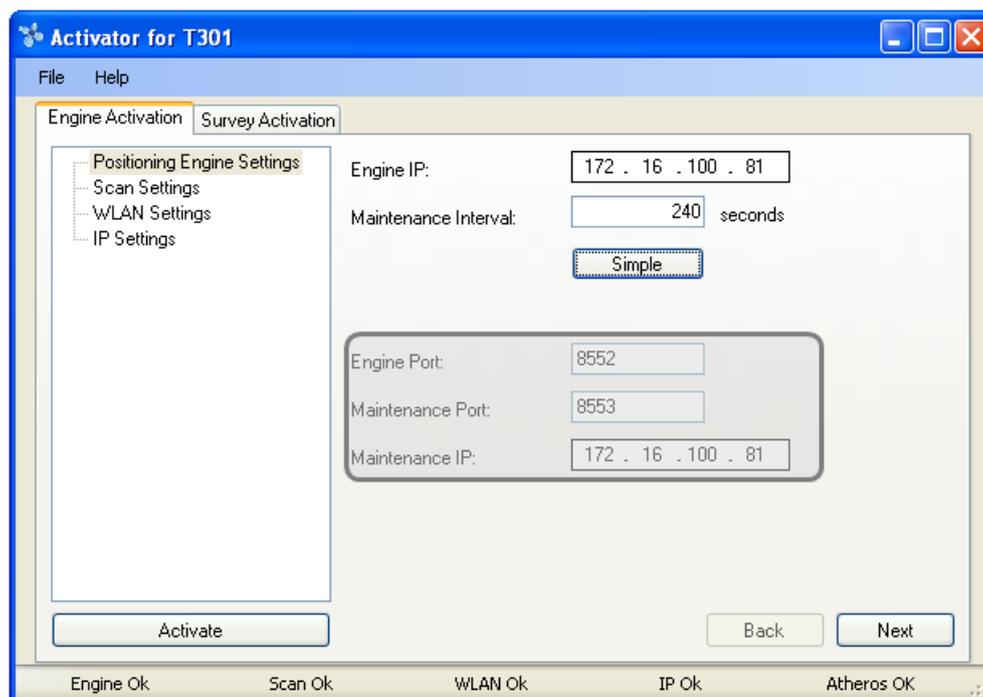
T301W tag. After completing the "Positioning engine settings", the status bar should show "Engine Ok". These are the minimum settings needed.

Figure 2.1. Specifying the Engine IP address and Maintenance interval



In case Engine Port, Maintenance port, and/or Maintenance IP needs to be changed, go to "Advanced" mode.

Figure 2.2. Specifying advanced Positioning Engine settings



### Note

When activating the T301W tags, only an initial setup is required for the tag to associate with the network. All the settings can be set and changed from the Ekahau RTLS Controller. Ekahau Activator T301 only provides a set of basic settings.

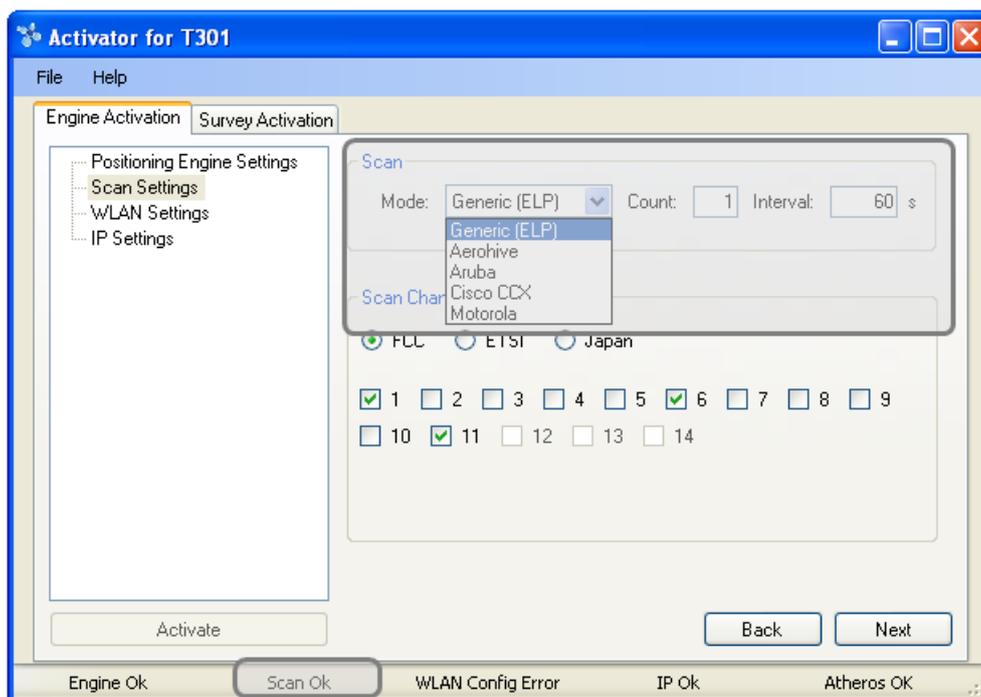
## 2.3.2 Configuring Scan Settings

Select which location update method you want to use. Select "Generic (ELP)" in case you want the tag(s) to communicate with the Ekahau RTLS Controller in associated mode where the tag associates to the network everytime it sends an ELP location update packet. If you want to use the tag(s) in beaconing mode, select the mode that corresponds to your Wi-Fi network vendor. In beaconing mode the tag does not associate with the network.

In the "Count" field you can define how many times the tag sends a location update packet during each location update. By default, the Scan Interval is 60 seconds. You may also use shorter interval, but it will drain faster the battery of the tag. Alternatively you can use longer Scan Interval and enable Motion Sensor through the Ekahau RTLS Controller after activation. This way the tag will scan only when it is in use and on move.

In addition to Scan Settings, you need to define the correct area the tag is used in. FCC for North America, ETSI for Europe and Japan for Japan. The software automatically disables the channels not available for the area selected. It is also recommended to only select the channels used in you network. Activating the unused channels will only reduce the battery lifetime of the tag. After completing the settings the status bar should show "Scan Ok"

Figure 2.3. Specifying the Scan Interval and the channels used in the network



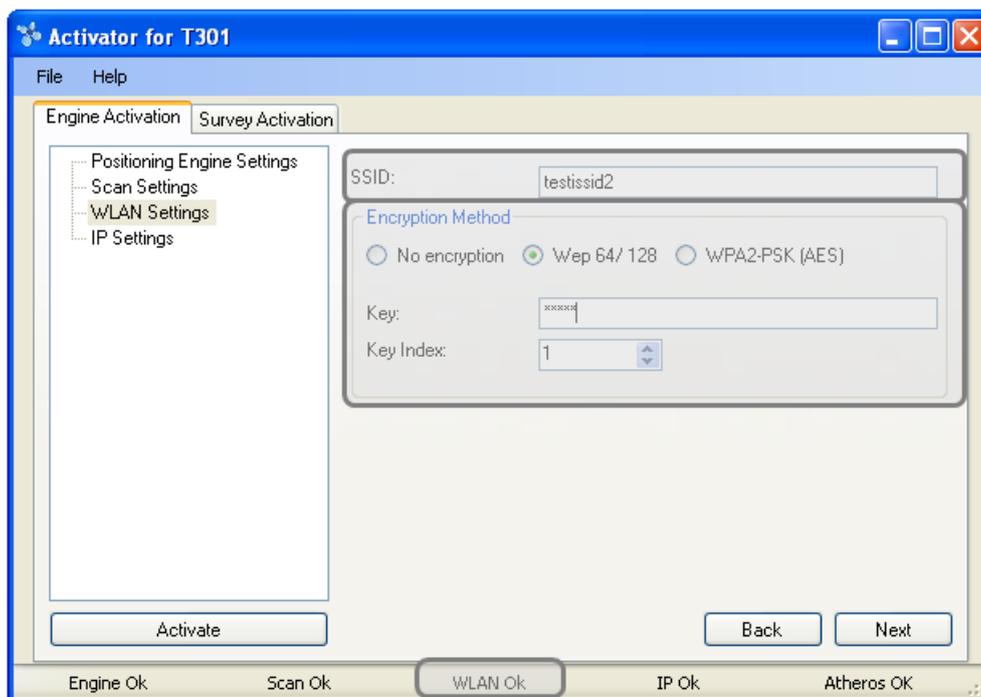
### Warning

Only use channels that really exists in you Wi-Fi network. Activating unnecessary channels will reduce the tag battery lifetime!

## 2.3.3 Configuring WLAN Settings

Input the Wi-Fi Network SSID and select the Encryption method used. If WEP 64/128 or WPA2-PSK is used type in the network key. After WLAN settings are completed the status bar should show "WLAN OK"

Figure 2.4. Specifying Wi-Fi network settings



### Tip

If WEP encryption is used the Activator automatically determines the key type and length from what you type. WEP 64 require 5 Ascii characters or 10 hex digits, respectively WEP 128 requires 13 Ascii characters or 26 hex digits.

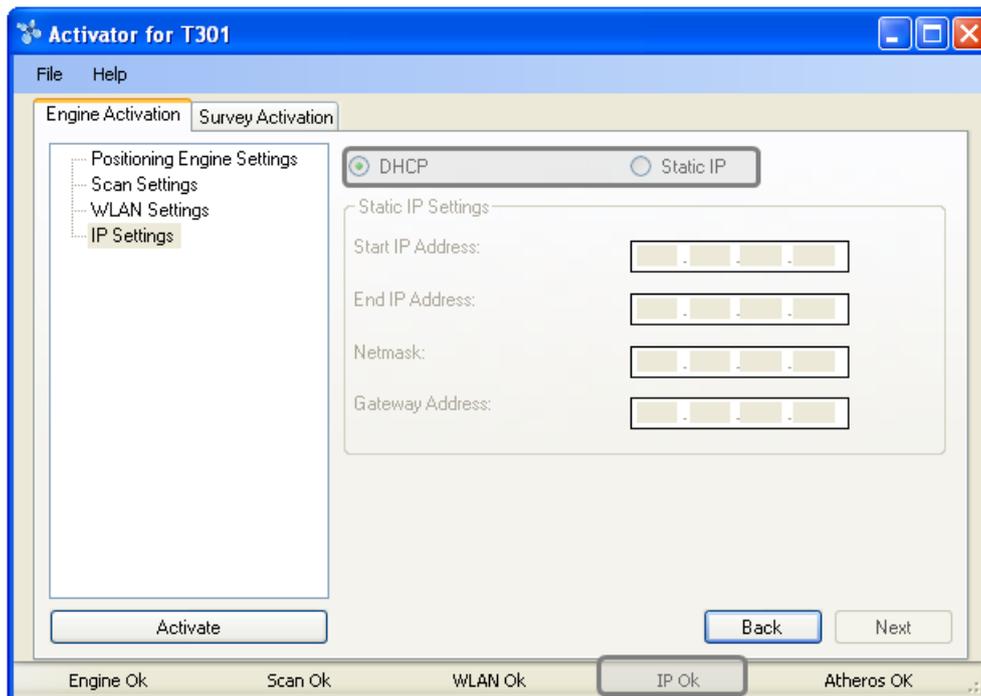
## 2.3.4 Configuring IP Settings

Check the IP settings. If DHCP is used nothing needs to be done. In case your network requires Static IP to be used, type in the IP address range to be used, Netmask and Gateway addresses.

**Tip**

If you only activate a single tag and wish to use static IP setting. Please input Start IP Address = End IP Address.

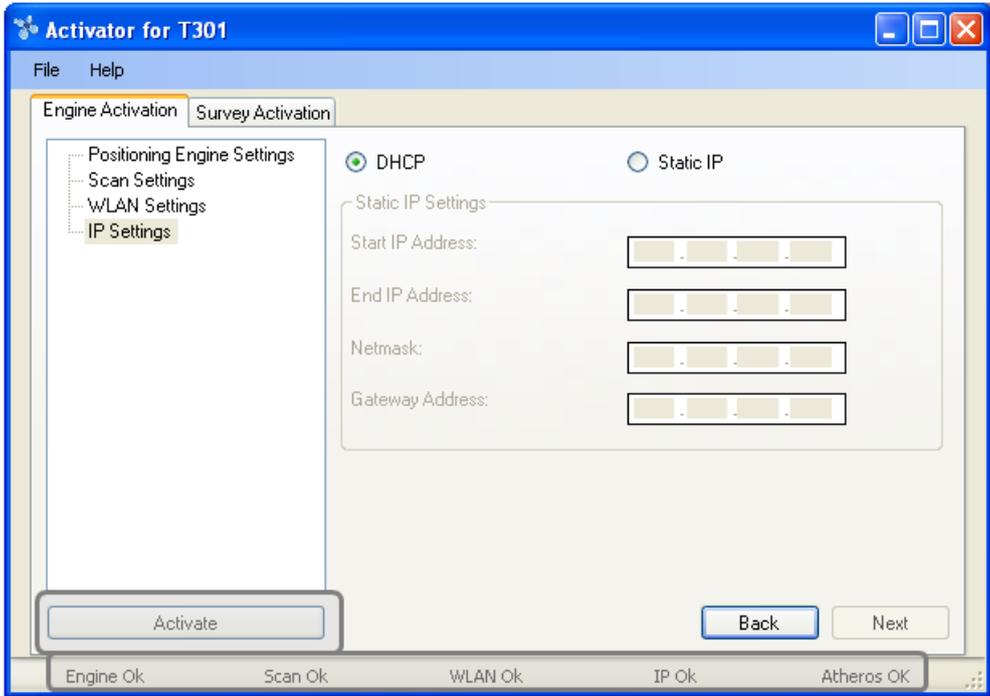
Figure 2.5. Specifying IP settings



### 2.3.5 Activation

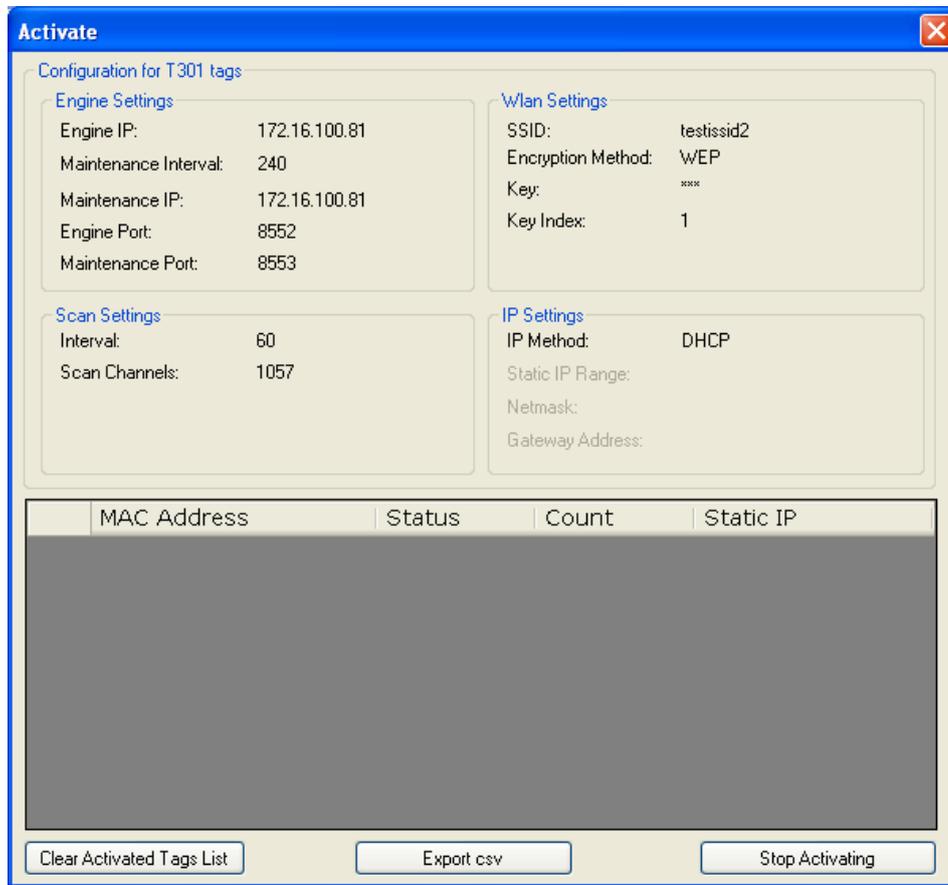
If the supported Wi-Fi adapter is inserted and all the settings are shown OK in the status bar, the Activate button should now be active. To continue Activating the Tags press the "Activate" button.

Figure 2.6. When all the settings are OK, you can start activating the tags



The Activation window shows all the settings on the upper side of the window. The list of the activated tags will appear on the area below.

Figure 2.7. The Activator is ready to start activating the tags

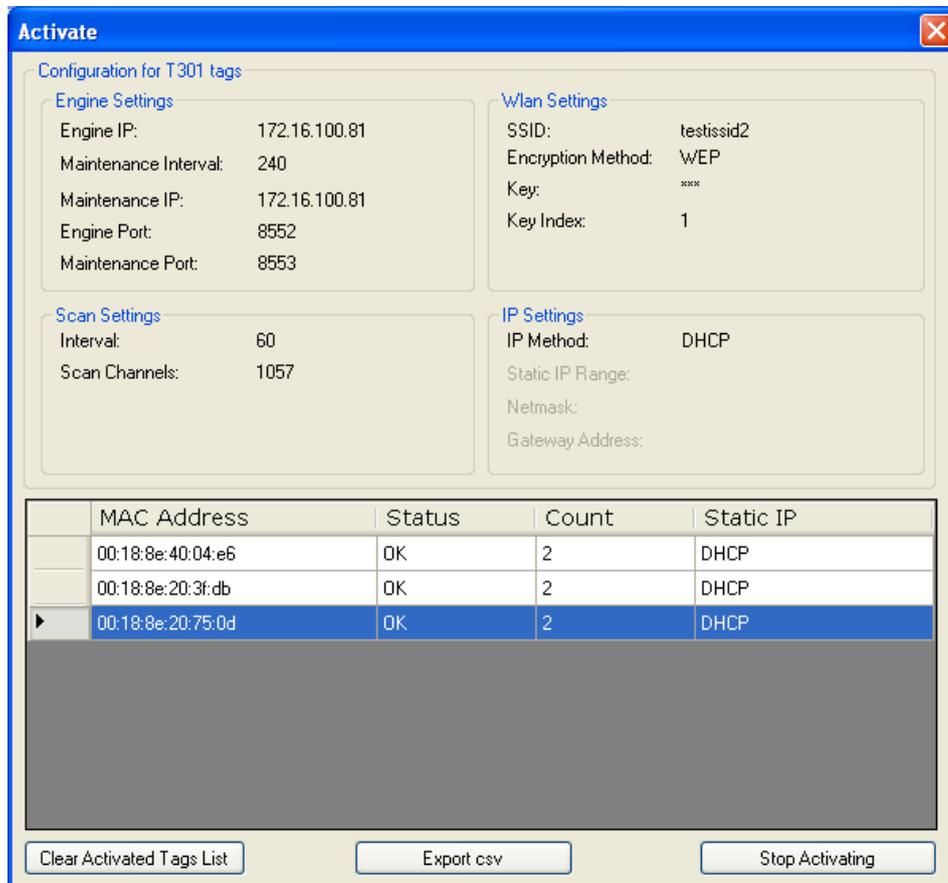


When the activation window appears, the Activator is ready to start activating the tags. To activate the tag, **press the small Activation Button on the side of the tag**. The tag will play the vibrator when the Activation Button is pressed. After successful activation, the tag will blink green LED three times. In addition, the TAG MAC address appears on the activation window, showing Ok status. Repeat this for all the tags to be activated.

#### Note

If WPA2-PSK encryption is used, it might take even 10-15 seconds before the tag appears to EPE's Tags list.

Figure 2.8. The Activator has activated one tag

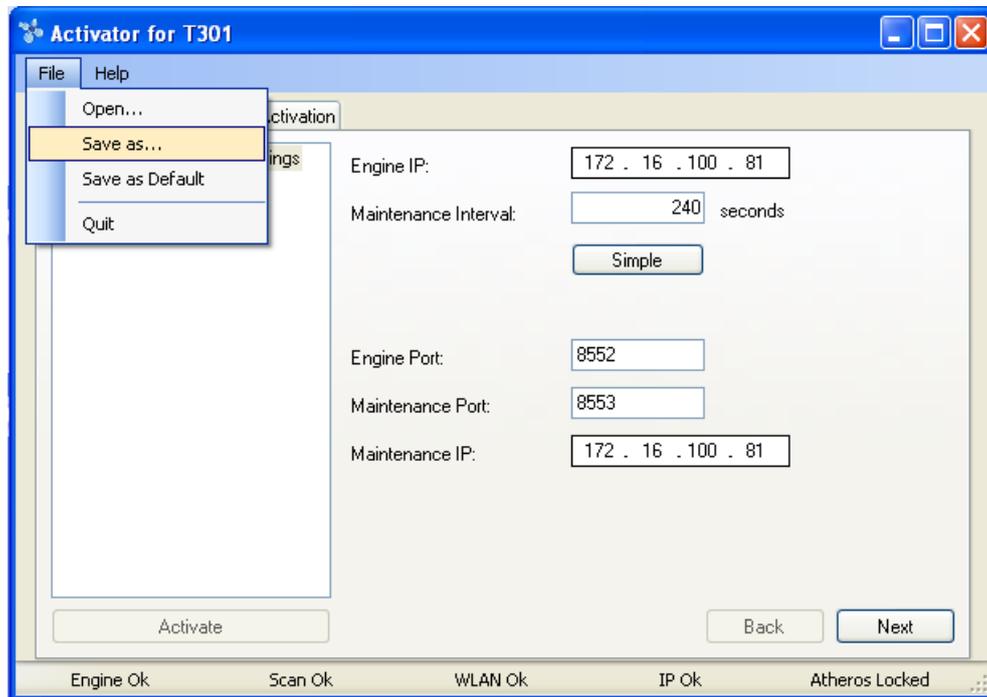


After completing activating the tags, close the activation window.

### Tip

After you have finished the activation, you can save the configuration for future use from the file menu. If you save the settings on Ekahau Activator T301.ini the setup will be the default every time the Activator is started.

Figure 2.9. Saving the configuration for later use



### 2.3.6 List of Available Settings in the Activator

The list of available settings in the Activator:

Setting	Description	Values	Default value
<b>Positioning Engine settings</b>			
Engine IP	IP Address Ekahau RTLS Controller.	IP Address.	0.0.0.0
Engine Port (UDP)	Port number of location protocol port of ERC.	Port number	8552
Maintenance IP	IP Address of Ekahau RTLS Controller, from where TAG gets the settings. Typically same as the Engine IP	IP Address	0.0.0.0
Maintenance port (UDP)	Port number of maintenance protocol port of ERC	Port number	8553
Maintenance interval	The interval of the periodic maintenance calls in seconds	0 - 63072000	10
<b>Scan Settings</b>			

Setting	Description	Values	Default value
Mode	Defines the location update mode. Select either "Associated Mode" or one of the "Beacon Modes".	Generic (ELP) (Associated Mode) Aerohive (Beaconing Mode) Aruba (Beaconing Mode) Cisco CCX (Beaconing Mode) Meru (Beaconing Mode)	Generic (ELP)
Count	Defines how many times a location update packet is sent during each location update	0 >	1
Interval	The interval of the periodic location scans in seconds.	0 - 63072000	10
Scan Channels	Sets the channels that are scanned	Enabled; Disabled	1 - 11 Enabled; 12 - 14 Disabled
<b>WLAN Settings</b>			
SSID	Sets the Wi-Fi network name - <i>Service set identifier</i>	SSID=max 32 digits	default
Encryption	Selects if WEP encryption is used	No Encryption; WEP 64/128; WPA2-PSK	No Encryption
WEP	Sets the WEP passphrase	ASCII: 5 or 13 characters HEX: 10 or 26 hexadecimal numbers (0-f)	-
WEP Index	Sets the WEP index used	1 - 4	1
WPA2-PSK	Sets the WPA2-PSK encryption and passphrase	8 - 63 ASCII characters	-
<b>IP Settings</b>			
IP method	Defines the IP address assigning method.	DHCP; Static	DHCP
<i>Static IP Settings</i>			

Setting	Description	Values	Default value
Address range	Sets the start and end address of the range used to assign the IP addresses to the tags when Static IP is used	IP address.	0.0.0.0 0.0.0.0
Network mask	Tag netmask when static addressing is used.	IP address	0.0.0.0
IP gateway	IP network gateway when static addressing is used.	IP address	0.0.0.0



## 3 Configuration After Initial Activation

The tag can be adjusted for each application and network settings by adjusting a set of parameters. The parameters can be changed wirelessly after resetting the tag by using the Ekahau Activator software or through **Tag Configurations** in Ekahau RTLS Controller.

Ekahau Activator is used for configuring the initial configuration settings that allows connecting the tag to ERC over the network. After connection is established with ERC, all configurations can be managed through Ekahau RTLS Controller.

### 3.1 Tag Configuration Settings in ERC Configs Page

In Ekahau RTLS Controller it is possible to create a configuration to a single tag or a group configuration to multiple tags. After the tags are activated, the configurations are applied to tags from the Tags page. It is also possible to apply a configuration automatically to all new tags via the Configs page. The list of available settings is in the following table:

Setting	Description	Values (Default underlined)
<b>Network</b>		
Scan Method	Allows using a vendor-specific method for signal measurement. The <b>Generic</b> method is vendor-independent.	<u>Generic (ELP)</u> , Aerohive, Aruba blink, Cisco CCX, Motorola
SSID 1	SSID 1 name, Encryption, Passphrase and WEP index.	See <i>Configuring WLAN Settings on page 6</i> for details
SSID 2	SSID 2 name, Encryption, Passphrase and WEP index.	See <i>Configuring WLAN Settings on page 6</i> for details
SSID 2 Association	Sets whether tag attempts to associate on T301W SSID 2 network.	No association and scan only; associate and scan; <u>Disabled</u>
Broadcast probe	Sets whether the tag uses broadcast probe when scanning.	Enabled; <u>Disabled</u>
<b>Tag IP Settings</b>		
IP Setting	Sets the IP method used.	Use DHCP for each access point Use DHCP once for all access points <u>Preserve the IP-address that was given by Activator</u>
<b>Positioning Engine</b>		
IP Address	Sets the ERC IP Address.	IP Address
Location update Port (UDP)	Port number of location protocol port of ERC.	Port number
Maintenance port (UDP)	Port number of maintenance protocol port of EPE.	Port number
<b>General</b>		

Setting	Description	Values (Default underlined)
Name	Name for the configuration set.	Free text
Description	Description for the configuration set.	Free text
<b>Channels</b>		
Scan Channels	Sets the channels scanned during a location scan.	<u>1- 11</u> ; 12 (EU); 13 (EU); 14 (Japan)
<b>Periodic Location Update and Maintenance</b>		
Periodic Location Update	Enables or disables the periodic location update.	<u>Enabled</u> ; Disabled
Location Update Interval	Sets the interval for the periodic location update.	The interval in Seconds, Minutes, Hours or Days
Periodic Maintenance	Enables or disables the periodic maintenance calls.	<u>Enabled</u> ; Disabled
Maintenance Interval	The interval of the periodic maintenance calls in seconds.	The interval in Seconds, Minutes, Hours or Days
<b>Sensors</b>		
Motion Sensor	Enables or disables motion sensors.	<u>Disabled</u> Profile 1 (in motion for 8s) Profile 2 (in motion for 4s) Profile 3 (in motion for 2s) Profile 4 (in motion for 1s)
Motion Update Method	Sets whether location updates are sent periodically during the motion or just when the motion starts and after the movement has ended.	<u>In-motion and after motion</u> ; After motion
Motion Update Interval	Sets the interval for motion updates.	<u>5s</u> ; 10s; 30s; 1min; 2min; 5min
Motion Stagnant Event	Enables or disables stagnant sensing.	Enabled; <u>Disabled</u>
Motion Stagnant Treshold	Sets how long the tag has to remain stagnant to produce a stagnant event.	The threshold in Seconds, Minutes, Hours or Days
Location Beacon Sensor	Enable or disable the location beacon sensor. In active mode a location update is done immediately when the tag notices a location beacon. In passive mode the recent observed location beacon ID is sent to EPE only when location update is initiated by other stimuli such as periodic or motion wakeup.	<u>Disabled</u> , Passive Mode, Active Mode
<b>Advanced scan settings</b>		

Setting	Description	Values (Default underlined)
Initial Scan Count	Number of scans the tag does on each triggered scan despite the triggering event. Used to improve the accuracy in difficult conditions and for rarely scanning applications.	<u>1</u> - 10
Delay between initial scans	Delay between the scans.	<u>No Delay</u> ; 250ms; 500ms; 1000ms; 1500ms; 2000ms
After Motion Scan Count	The number of scans the tag performs for each after motion event.	<u>0</u> - 10
Button Scan Count	The number of scans the tag performs for each button event.	<u>0</u> - 10
<b>Battery Lifetime Estimation (Optional)</b>		
Movement Frequency of Tags	Estimated frequency of movement occasions with the defined configuration. This is relevant only when Motion Sensor is enabled. Otherwise leave the field empty.	Movement occasions per Hour, Day
Average Movement Duration	Estimated average duration of a single movement occasion. This is relevant only when Motion Sensor is enabled. Otherwise leave the field empty.	Average movement duration in Seconds, Minutes, Hours

**Note**

1) Network wide DHCP enables roaming between subnetworks. With this setting the tag refreshes its IP address whenever the tag associates with a new access point. It is not recommended to use the feature, if not required, due to higher power consumption

**Note**

2) Using the **Advanced Scan Settings** need a careful consideration. The scanning consumes a high amount of energy, and the more scanning is done the less battery life the tag has. Typically these parameters are used to improve accuracy in very difficult conditions or in cases the tag otherwise would scan rarely.

## 3.2 Tag Actions Available in ERC Tags Properties Page

Setting	Description	Values
<b>User Data</b>		
Name	A user given name for tag	Free text

Setting	Description	Values
Custom	A custom note	Free text
Member of Groups	The groups the tag belong to	List of groups or "No Groups created" if no groups exist. Go to groups page to create groups.
<b>Commands</b>		
LED / Vibration	Launches the alarm at the tag with LEDs only or with vibration and LEDs. The alarm duration can be set.	LED; LED and Vibration Duration: 10s; 1min; 10min; 30min; 1h; 2h
Manual Commands	Manual command or a list of commands can be sent to a tag.	-
Set Config	A pre defined config can be selected and sent to tag(s)	A list of available configs. Go to configs page to create tag configurations.
<b>Firmware Update</b>		
Firmware	Tag firmware can be updated. The new firmware needs to be first uploaded in the configs page	A list of available firmware updates uploaded in ERC. The firmware needs first to be uploaded into ERC, this is done in configs page.
<b>Create New Group</b>		
Group Name	New group is created and the tag is included into this created group.	Free text
<b>Manual IP Settings</b>		
Manual IP address	Sets the tag IP Address	IP Address
Netmask	Sets the tag netmask	IP Address
Gateway	Sets the default gateway for the tag	IP Address
<b>Delete</b>		
Delete	The tag is deleted from the system. All statistics are cleared. The tag will appear in the system again when it report it's location next time.	-

**Note**

Currently the T301W's vibration is controlled and configured by using the same commands that are used with the Buzzer. Remember that T301W tag does not have a buzzer alarm!

## 4 Tag Operation

### 4.1 Button Activated Location Update

In addition to periodic location updates, the tag can also be set to scan and update its location when any of the buttons is pressed. After a button press the tag scans immediately and sends the results to ERC. The LEDs indicate the scan success or failure similarly as in the scan activated by the wake up interval.

### 4.2 Maintenance Call

The T301W performs normal periodic Maintenance Calls. The interval of the Maintenance Calls can be set during the initial activation or after the activation via Ekahau RTLS Controller.

The T301W tag does not perform button activated maintenance calls. Instead, when the button is pressed, ERC will respond to the Location Update with ACK packet which can indicate if there is pending Maintenance command message. If there is, the T301W will perform automatically Maintenance Call.

### 4.3 De-activation / Resetting to Factory Settings

The T301W tag can be reset back to factory settings by pressing the Activation Button on the side of the tag. Use small pen or pin to press the button. The tag will be reset to factory settings immediately. When it has been successfully reset, the tag will blink the LED three times as Green and Red in turns.

### 4.4 Firmware Update

The tag firmware can be updated wirelessly using ERC. The firmware is uploaded to the tags from the **Tag Properties** page or directly from **Tags** page in ERC. Follow instruction in the ERC User Guide for updating the firmware.

#### Note

If the Tag battery level is below 50 % the FW update is not allowed. The corresponding error code in ERC is **TU**. To update the firmware, please first recharge the battery and try again.

#### Note

T301W firmware update requires a new UDP port allocation from EPE (defaults to 8563). See "Global Settings" page in EPE Config Utility.

## 4.5 Optimizing Battery Life

The T301W Wi-Fi tag uses an ultra-low power system-on-chip architecture that lowers the power consumption to minimal. This enables running tags with same batteries for several years. However, to get the maximum lifetime from your tags you should take care that your network and tag configuration supports all possible power save features.

The principal in optimizing battery life is to determine the maximum interval for location updates, still sufficient for the use case, to minimize the amount of time the tag is active.

Recommendations for optimizing battery lifetime:

- Scan only channels that are in use in your network. Typically, because of overlap of channels, there are only 3 or 4 channels in use from the 11 (or 13/14) available.
- Use single SSID whenever possible. Using multiple SSIDs requires additional network scans and decreases battery lifetime.
- When using dynamic IP addressing tune the DHCP server to provide very long lease times for tags.
- T301W tag supports roaming between subnetworks. This feature renews tag's IP address whenever the access point association changes. Since renewing IP addresses consumes large amounts of energy, it is strongly recommended not to use the network wide dynamic addressing feature if it is not needed.
- Tune the wake up settings to match your application needs. More frequent updates lower the battery lifetime.

## 4.6 Turning off the T301W Tag

The T301W tag can only be turned off by resetting the tag to factory settings which is explained in chapter *De-activation / Resetting to Factory Settings on page 19*. To continue using the tag after resetting, you have to re-activate it following the instructions explained in chapter *Activation Procedure on page 3*.

## 4.7 Charging the T301W tag

The T301BD tag is delivered with the battery charged to a storage charge, and it is recommended to fully charge the batteries before first time activating the tag. To ensure the tag battery is full, please put the tag in to a charger for 2 hours.

The tag will give a notification when the tag battery is low. Connect the charger and the LED will show orange light during the charging. after the tag is fully charged the LED will turn green. If the tag battery is completely empty, the tag will automatically turn off. After a charger is connected, the tag will automatically return to it's normal function, maintaining last settings.

The Ekahau supported adapters are

1. Ekahau C-T301W Charger
2. Ekahau C301W-9 Multi Charger

**Note**

In case the tag battery is completely empty, typically when left empty and uncharged for several days, it may take a long time for the tag even to turn on the orange led. Just connect the charger and leave the tag to recharge overnight.

**Warning**

Only use Ekahau supported adapters for charging the tags.

**Warning**

Recharge the tag only in room temperature conditions, 0 °C - 40°C (32 °F - 104 °F). Recharging the tag in too cold or too hot conditions may damage the tag.



## 5 Technical specifications

### 5.1 General

- Outside Dimensions (mm): 14.1 x 38 x 47.5
- Weight: 0.88 oz / 25 g
- Power: Re-Chargable Lithium Polymer battery
- Charging with 5 VDC, 500 mA max
- One button with call button functionality
  - \* In addition a switch on the side for re-setting the tag
- Vibration alarm for alerting the person wearing
- Built-in 3D accelerometer for detecting different states of movement (Currently not in use)
- One red/green/orange status indication LED
- Operating Temperature: 32 to 104 °F / 0 to 40 °C, battery lifetime is lower on the low and high end of the temperature range.
- Storage Temperature: -4 to 104 °F / -20 to 40 °C, battery lifetime is lower on the low and high end of the range. Storage in room temperature is recommended.
- Humidity: From 20 % to 95 % non-condensing, relative humidity
- Environmental Protection: Dust and water proof - IP66 & IP67

### 5.2 Wi-Fi

- Supported IEEE Standards: 802.11b/g
- Modulation Scheme: Direct Sequence Spread Spectrum (DSSS)
- Media Access: CSMA/CA
- Frequency Ranges:
  - \* 2.400 - 2.4835 GHz (USA, Canada, Europe)
  - \* 2.400 - 2.497 GHz (Japan)
- Supported Networking Protocols: UDP/IP, DHCP or static addressing
- Security: 64/128-bit WEP key, WPA, and WPA2-PSK authentication
- Antenna Type: Internal 2.4GHz SMD omni-directional ceramic multilayer
- Maximum Antenna Gain: +1.8 dBi

### 5.3 Operating Ranges from an Access Point

- Open Space: 60m (180ft)
- Typical Office: 30m (90ft)

### 5.4 Care and Maintenance

- Even though the tag is water resistance, it should be stored and kept in dry conditions.
- Do not use or store the tag in dusty, dirty areas. Its moving parts can be damaged.
- Do not store the tag in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the tag in cold areas. When it warms up (to its normal temperature), moisture can form inside, which may damage electronic circuit boards.
- The operating temperature of the tag is 0 to 40 °C (32 - 104 °F). Do not operate the tag outside this temperature range.
- Do not drop, knock or shake the tag. Rough handling can break internal circuit boards.

- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the tag.
- Do not paint the tag. Paint can clog the moving parts, affect the radio communication and prevent proper operation.
- Use a soft and clean cloth with mild detergent to clean the tag.
- Use only the supplied antenna. Unauthorized antennas, modifications or attachments could damage the tag and may violate regulations governing radio devices.

## 6 Certifications

Ekahau has applied for **FCC** and **CE** certifications. The state of these certifications is "*Proposed*". Ekahau expects these certifications to be approved later this year.



## 7 Limited Warranty

Ekahau warrants that the Tags will operate in accordance with and substantially conform to their published specifications when shipped or otherwise delivered to the end user and for a period of 1 year thereafter, provided, however, that Ekahau does not warrant any claim or damage under this Warranty if such claim or damage results from:

1. Misuse, neglect, accident or improper installation or maintenance of the Tags,
2. Tags that have been altered, modified, repaired or tampered with by anyone other than Ekahau,
3. Use of the Tags not in compliance with their respective documentation, user manuals, instructions, and any usage restrictions contained therein, including, but not limited to, the provisions relating to the environment and ranges where the tags must be used, or
4. Accident, fire, power failure, power surge, or other hazard.

Otherwise, the Tags are sold AS IS. In no event does Ekahau warrant that the Tags are error free or that end user will be able to operate the Tags without problems or interruptions.

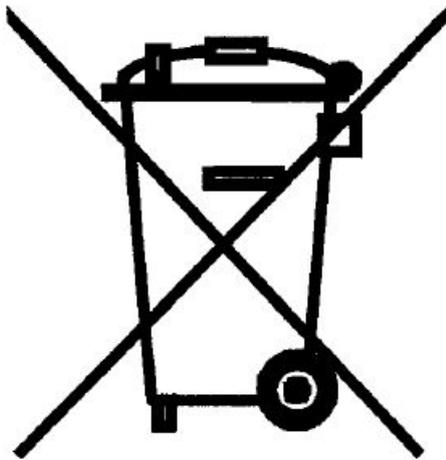
End User is responsible for using the Tags within their specifications as contained in the Documentation.



## 8 Disposing

### Note

The Ekahau T301W Wi-Fi tag is non-recyclable. To dispose the tag, send it to a company that is capable of handling electrical waste. Alternatively, you can send the tag back to Ekahau who will dispose it for you.





## **FCC Statements for Portable Devices:**

### **Compliance Statement (Part 15.19)**

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

### **Warning (Part 15.21)**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **FCC Interference Statement (Part 15.105 (b))**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This portable transmitter with its antenna complies with FCC/IC RF exposure limits for general population / uncontrolled exposure.

## **Industry Canada Statements for Portable Devices**

### **Section 7.1.3 of RSS-GEN**

Operation is subject to the following two conditions:

- 1) this device may not cause interference, and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le fonctionnement de ce système est assorti aux deux conditions suivantes :

- 1 L'appareil ne peut causer d'interférences nuisibles, et
- 2 L'appareil doit accepter les interférences reçues, y compris celles qui pourraient nuire à son fonctionnement.

### **Section 7.1.2 of RSS-GEN**

"Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication."

"Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante."